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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,265

03/29/2006

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EXAMINER

CHOI, LING SIU

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

03/09/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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PPROCESSING@SUGHRUE.COM  
USPTO@SUGHRUE.COM

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,265	<b>Applicant(s)</b> SHINODA ET AL.	
	<b>Examiner</b> Ling-Siu Choi	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 5-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :04/13/2005, 11/13/2007, 12/03/2007, 05/13/2008.

### **DETAILED ACTION**

1. This Office action is in response to the Response to Election/Restriction Requirement filed 10/26/2009. Claims 1-4 of Group I have been elected without traverse.

#### ***Claim Objections***

2. Claim 2 is objected to because of the following informalities: Claim 2, line 4, "(wherein" is suggested to be changed to --wherein--; line 8, "(R<sup>1</sup> represents" is suggested to be changed to --R<sup>1</sup> represents--; line 19, " "form a ring))" is suggested to be changed to --form a ring--.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

**The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

4. Claims 2-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2, lines 1-2, “the repeating unit of a block containing a halogen atom” causes confusion. Is it referred to “the repeating unit of a block having substantially no acid group containing a halogen atom”?

Claim 2, lines 17-18, “**any of R<sup>1</sup> and Y** (when there are plural groups, at least one of them) contains a halogen atom” causes confusion. Is “there are **plural groups**, at least one of them” referred to the condition: when there are more than one of each R<sup>1</sup> and Y, at least one of them contains a halogen atom? If it is the case, it is different from the condition: any of R<sup>1</sup> and Y (.....) contains a halogen atom.

Claim 3, line 2, “a block containing a halogen atom” causes confusion. Is it referred to “a block having substantially no acid group containing a halogen atom”?

### ***Claim Analysis***

#### 5. Summary of Claim 1:

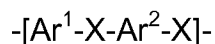
A block copolymer characterized in that said block copolymer has	
	at least one block having an acid group and
	at least one block having substantially no acid group,
	<u>one end group of a repeating unit</u> in at least one block of all blocks is oxygen and/or sulfur, and
	at least one repeating unit of a block having substantially no acid group contains a halogen atom.

#### Summary of Claim 2:

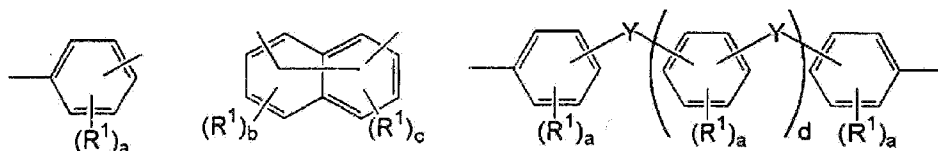
The block copolymer according to claim 1, wherein the repeating unit
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of a block containing a halogen atom is represented by the following general formula:



wherein X represents an oxygen atom or a sulfur atom, and Ar<sup>1</sup> and Ar<sup>2</sup> represent independently a divalent aromatic group represented by the following formula:



R <sup>1</sup>	an C <sub>1-10</sub> alkyl group, a halogenated C <sub>1-10</sub> alkyl group, a halogenated aryl group, a hydroxyl group, an acetyl group, a benzoyl group, a nitrile group, a nitro group or a halogen atom, When there are plural R <sup>1</sup> s, they may be the same or different, or R <sup>1</sup> s may be bound together so that the bond constitutes a part of a cyclic structure,
a, b and c	independently an integer of 0 to 4, a sum of b and c is 0 to 6,
d	an integer of 0 to 2,
Y	a direct bond, -O-, -S-, -C(O)-, -SO <sub>2</sub> -, -C(R <sup>2</sup> ) <sup>2</sup> -, an C <sub>1-6</sub> alkylene group, a halogenated C <sub>1-10</sub> alkylene group, an C <sub>1-6</sub> alkylenedioxy group, or a halogenated C <sub>1-10</sub> alkylenedioxy group, when there are plural Ys, these may be the same or different, R <sup>2</sup> s = an C <sub>1-10</sub> alkyl group, or a halogenated C <sub>1-10</sub> alkyl group, two R <sup>2</sup> s may be the same or different, or may form a ring.
any of R <sup>1</sup> and Y (when there are plural groups, at least one of them) contains a halogen atom, and	

**Claim Rejections - 35 USC § 102**

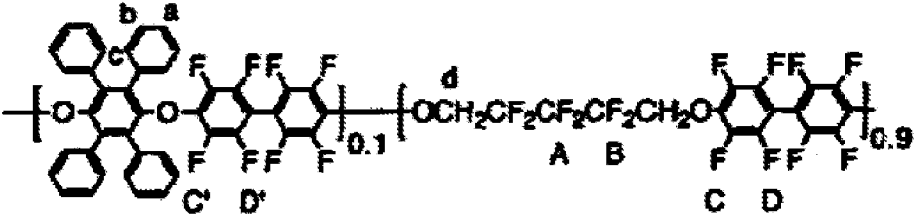
6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyatake et al. [ Macromolecules, **34**, 2065-2071 (2001)].

Miyatake et al. disclose a polymer electrolyte for fuel cells, wherein the polymer electrolyte comprises an aromatic copolymer containing sulfonated tetraphenyl phenylene ( hexaphenylbiphenylene), fluorinated alkane, perfluorobiphenylene moieties (col. 1, page 2065; page 2068):

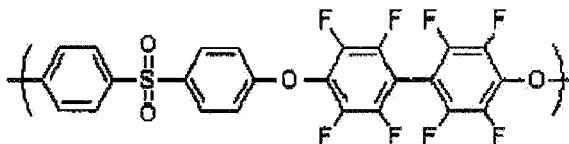
	
one block having an <b>acid group</b>	one block having substantially <b>no acid group</b>
<u>one end group</u> of a repeating unit in at least one block of all blocks is <b>oxygen and/or sulfur</b>	one repeating unit of a block having substantially <u>no acid group</u> containing a <b>halogen atom</b>

Thus, the present claims are anticipated by the disclosure of Miyatake et al.

***Allowable Subject Matter***

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8. In view the Response to Election/Restriction, the following species



has been elected for the block containing a halogen atom (  $-\text{Ar}^1\text{-X-Ar}^2\text{-X}-$  ). Since no reference teaches or fairly suggests a block copolymer comprising such a block, the block copolymer is allowable.

### **Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

February 25, 2010



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